

CLAIMS

1. An interface cable adapted to connect to a sensor, said interface cable comprising:  
a unitary cable structure comprising first and second cable portions;  
said first cable portion comprising first power supply leads and first sensor leads;  
said second cable portion comprising second power supply leads and at least one second sensor lead;  
a power convertor enveloped in a shroud formed integrally with said cable between said first and second cable portions;  
a sensor interface located in said shroud and forming a connection between said first sensor leads and said at least one second sensor lead;  
said power convertor converting power input from said first power supply leads to a power form for powering a sensor; and  
said sensor convertor converting a sensor output provided through said at least one second sensor lead to a different sensor output form for said first sensor leads.
2. The interface cable of claim 1 wherein said power convertor converts an AC input power from said first power supply leads to a DC output at said second power supply leads.
3. The interface cable of claim 1 wherein said power convertor comprises a power switching supply encased in said shroud.
4. The interface cable of claim 3 wherein said power switching supply converts an AC input power from said first power supply leads to a DC output at said second power supply leads for powering a DC sensor.
5. The interface cable of claim 4 wherein said sensor convertor converts a DC output from the sensor to an AC output.

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6. The interface cable of claim 5 wherein said sensor convertor comprises an optoisolator triac.
7. The interface cable of claim 4 wherein said at least one second sensor lead comprises a lead for connection to different sensor outputs including a current sinking output and a current sourcing output.
8. The interface cable of claim 1 wherein said shroud defines an elongated cylindrical member having a length dimension extending generally in a direction of extension of said first and second cable portions, said cylindrical member including tapered ends tapering toward said first and second cable portions.
9. The interface cable of claim 8 wherein shroud defines a maximum diameter dimension which is less than 1 inch.
10. The interface cable of claim 1 wherein said shroud comprises a potting material encasing said power convertor and said sensor interface.
11. The interface cable of claim 10 wherein said power convertor and said sensor interface are mounted on a printed circuit board extending longitudinally through said shroud.
12. The interface cable of claim 10 wherein said potting material comprises an epoxy material.
13. The interface cable of claim 10 including a overmold material surrounding said potting material and extending in overlapping relation over a portion of said first and second cable portions.

14. The interface cable of claim 13 wherein said overmold material comprises PVC.
15. An interface cable adapted to connect to a sensor, said interface cable comprising:
  - an integrated power convertor;
  - a sensor interface;
  - an elongated shroud structure comprising a potting material encasing said integrated power convertor and said sensor interface;
  - a unitary cable structure comprising first and second cable portions integral with said elongated shroud structure;
  - said first cable portion comprising first power supply leads and first sensor leads;
  - said second cable portion comprising second power supply leads and at least one second sensor lead;
  - said power convertor converting AC power input from said first power supply leads to a DC power form for powering a DC sensor; and
  - said sensor convertor converting a sensor output provided through said at least one second sensor lead to a different sensor output form for said first sensor leads.
16. The interface cable of claim 15 wherein said at least one second sensor lead comprises a lead for connection to different sensor outputs including a current sinking output and a current sourcing output and said sensor convertor provides a switching connection converting a current sinking output and current sourcing output to a closed connection between two of said first sensor leads.
17. The interface cable of claim 15 wherein said shroud comprises an epoxy potting material encasing said power convertor and said sensor interface.
18. The interface cable of claim 17 wherein said power convertor and said sensor interface are mounted on a printed circuit board extending longitudinally through said shroud.

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19. The interface cable of claim 17 wherein shroud defines a generally cylindrical cross section, said length dimension being greater than said lateral dimension.

20. The interface cable of claim 17 including a PVC overmold material surrounding said potting material and extending in overlapping relation over a portion of said first and second cable portions.